

E - LEARNING AND COMPUTER-BASED MULTIMEDIA EDUCATION INTERVENTION AND ITS EFFECT ON THE RELATIONSHIP BETWEEN KNOWLEDGE, ATTITUDE AND PRACTICES OF RURAL WOMEN

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ABSTRACT

The study aims to evaluate the relationship among Knowledge, Attitude and Practice scores pre and post intervention. In this E- learning educational intervention study, 130 rural women aged (15-49 years) were randomly selected from three different villages of Telangana and divided into an experimental group (n=100) and control group (n=30). Only experimental group received intervention for a period of 6 months while the control group did not. Receive any intervention. The two groups completed KAP standardized questionnaire developed for the study at baseline and after 6 months. The nutrition education intervention consisted of e – learning material in the form of 2 D animation. KAP and overall scores before and after intervention were compared and a relationship was derived. Our findings revealed that the correlation matrix between nutrition and health knowledge, attitude and practice of pre intervention and post intervention that the respondent's nutrition and health knowledge was significantly and positively associated with attitude and showed no significant behavior with nutrition and health practices.

KEYWORDS: E – Learning, Knowledge, Attitude, Practice, 2 D Animation & Rural Women

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INTRODUCTION

Advances in Information technology, coupled with changes in society, have had a tremendous impact on our educational and training systems. Participants of this education and training paradigm require a rich learning environment supported by well - designed resources. They expect on - demand, anytime / anywhere high - quality learning environment with good support services. In other words, it is not essential to educate the individuals necessarily in educational centers within closed walls, but can be extensively conducted at public access with adequate flexibility of a specific time and place (Arzanivet *et al.* 2008).

This type of education is the most important application of Information technology, which is provided in the form of open-line learning with various modes, such as computer - based learning and web - based learning and closed - line learning.

E-learning refers to the use of computer and internet technologies to deliver a broad array of solution that enable learning and improve performance (FAO, 2011). It can be used by educators to improve the efficiency and effectiveness of educational intervention in the face of the social, scientific and pedagogical challenges.

Multimedia technology broadly refers to the development and use of various types of media and communication technologies to enhance content visualization and user interaction. Multimedia technology

integration is becoming a core part in the development of e – learning technologies.

Rural patients and those from lower socio - economic background responds well to computer - based interventions. In fact, patients with low literacy skills may have greater benefit from the individualized pace of instruction and the non-threatening learning that occurs with a multimedia program. The use of graphics and audio may make understanding easier for individuals with limited reading ability. Computer-based patient education can occur at their pace. It has a positive impact on knowledge acquisition and supports patients' understanding of their personal disease and plan of disease management. (Lewis, 1999).

A multimedia health education intervention, designed by Valdez *et al.* (2002) to provide education on breast cancer for low educated, low income Latinas exhibited the higher knowledge and attitude scores in the intervention group than the pretest groups. The intervention also increased the likelihood of women seeking information about mammograms.

Tessaro *et al.* (2007) evaluated effectiveness of computer based interactive nutrition intervention program with rural women from low - income. It was seen that the intervention group had significantly improved scores on knowledge of dietary fats, food label reading and readiness to eat 5 servings of fruits and vegetables a day and foods lower in fat compared to the control group.

Upadhyay *et al.* (2011) examined the impact of the use of a single vs. combination of media on nutrition knowledge and hemoglobin status of women in a rural hilly area in Uttarakhand. They stated that calendars and video films were effective in increasing the nutrition knowledge of illiterate women of hill area. The use of mass media programs of longer duration should be encouraged to combat the nutritional problems of rural communities.

Knowledge is the capacity to acquire, retain and use the information. It is a mixture of comprehension, experience, discernment and skill. Education is the pre requisite of knowledge. It is the raising of a child or an adult so that he or she acquires intellectual and manual skills, develops moral qualities and demonstrates good manners and behavior to others.

Attitude refers to the inclinations to react in a certain way to certain situations, to see and interpret events according to certain predispositions or to organize opinions into coherent and interrelated structures.

Practice is the application of rules and knowledge that leads to good action. Good practice is an art that is linked to the progress of knowledge and technology, and is executed in an ethical manner.

Thus, the knowledge (K), Attitude (A) and Practice (P) are the three main dependent variables of nutrition and health for the study.

MATERIALS AND METHODS

- Research design:
- Design of the experiment: Assessment practice before and after intervention
- Number of villages: 3
- Number of treatments: 1

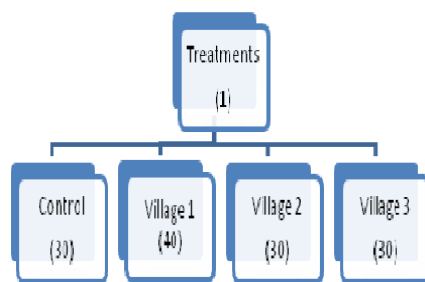


Figure 1: Categorization of Respondents in Three Different Villages in the Experimental Group and Control Group

A total sample of 130 rural women belonging to the reproductive age group of (15-49) years as shown in figure 1. Were selected from three villages namely Pudur, Gangupaly and Mirzapur of Pudurmandal, Rangareddy district, Telangana. The control group constituted of 30 women, 10 from each village and the rest of 100 rural women were divided among the three villages which comprised the experimental group.

In the present study quasi experimental design has been used for pre – post testing with a control group. Thus, this design would enable the researcher to assess the effectiveness of the material developed on the knowledge, attitudes and practices of the rural women before and after the educational intervention.

The following dependent and independent variables were included in the present investigation. These variables were chosen for the review of relevant literature and discussions with the subject matter experts. The measurement tools used to measure the dependent and independent variables are presented in the table 1.

Table 1: Dependent and Independent Variables of the Study

VARIABLES		
S. NO	INDEPENDENT	DEPENDENT
1	Age	Knowledge
2	Marital status	Attitude
3	Education	Practices
4	Family type	
5	Occupation	
6	Income	
7	Audio – visual material possession	
8	Mass media exposure	
9	Urban contact	

KAP questionnaire scores were measured twice before, and after the nutrition education intervention. SPSS version 21 was used to analysis the data. The total scores of knowledge, attitude, and practice pre- and post- the nutrition educational intervention were tested for the effectiveness of the e – nutrition education material developed for the rural women was measured in terms of gain in scores and quantum of improvement.

Gain in Knowledge = score of post test – score of pre -test.

Quantum of improvement =post test score/ pre -test score.

Change in KAP scores is the gain in knowledge of experimental group – gain in knowledge of the control group.

RESULTS

Table 2: KAP Scores Obtained by Rural Women in the Experimental Group before and After Exposure to the 2 D Animated Films

Experimental Group (N = 100)						
Parameter	Pre – Test	Post – Test	T – Value	Gain in Scores	Quantum of Improvement	Change in Knowledge
Knowledge	10.85±0.24	17.70±0.13	25.03**	6.85	1.63	5.78
Attitude	52.87±0.38	70.64±0.17	42.24**	17.8	1.34	17.5
Practice	24.59±0.36	30.70±0.16	15.42**	6.11	1.25	6.11
OVERALL	88.31±0.68	11.9±0.26	42.55**	30.7	1.35	

Significant at 1%, * - Significant at 5%; ns - Non significant at 5%

Table 3: KAP Scores Obtained by Rural Women in the Control Group Before and After Exposure to the 2 D Animated Films

Control Group (N=30)					
Parameter	Pre-Test	Post-Test	T-Value	Gain	Quantum
Knowledge	10.130.34	11.200.39	2.06*	1.07	1.11
Attitude	51.500.52	51.80.59	0.38 ^{ns}	0.3	1.01
Practice	24.59±0.36	24.59±0.36	-	-	-
OVERALL	61.630.68	63.00.71	0.38 ^{ns}	1.37	1.02

Significant at 1%, * - Significant at 5%; ns - Non significant at 5%

Association between Nutrition and Health Knowledge, Attitude and Practices

The relationship between nutrition and health knowledge, attitude and practices, pre and post educational intervention are shown in the following tables.

Table 4: Relationship among Pre KAP Scores

	Pre-Knowledge	Pre-Attitude	Pre-Practice
Pre-knowledge		0.2*	
Pre-attitude			0.27**
Pre-practice	0.1ns		

Table 5: Relationship among post KAP scores

	Post-Knowledge	Post-Attitude	Post-Practice
Post-knowledge		- 0.33**	
Post-attitude			0.01ns
Post-practice	0.16ns		

Table 6: Relationship between Pre KAP and Post KAP Scores

	Post-Knowledge	Post-Attitude	Post-Practice
Pre-knowledge		0.11ns	
Pre-attitude			0.13ns
Pre-practice	-0.12ns		

Table 7: Relationship between Pre KAP and Post KAP Scores

	Post-Knowledge	Post-Attitude	Post-Practice
Pre-knowledge	0.02ns		
Pre-attitude		0.19ns	
Pre-practice			0.44**

- Significant at 5 per cent level

- Significant at 1 per cent level.

DISCUSSIONS

Table 2 and 3 depicted that the gain in KAP scores were 6.85, 17.8 and 6.11 with reference to knowledge, attitude and practice respectively in the experimental group while in the case of the control group gained in KAP scores were negligible i.e. 1.07, 0.3 and 0 respectively.

The differences in gain of KAP scores were highly significant ($P \leq 0.01$) in the experimental group, while non-significant in case of the control group. It was found that the quantum of improvement in knowledge, attitude and practices was 1.63, 1.34 and 1.25 times, which signified that nutrition education intervention through 2D animation imparted to an experimental group resulted in significant improvement ($P \leq 0.01$). The change in KAP scores was 5.78, 17.5 and 6.11 respectively, showing that there was a significant improvement in KAP score.

The 't' values for the significance of difference between the mean score for assessment before and after intervention suggest that these differences were statistically significant. The post test scores on KAP were higher than the pretest scores and suggested that better knowledge, more positive attitude and better practice of management of health and nutritional status. Further, individual differences in the scores were also reduced considerably during post-test.

A study by Priya *et al.* (2012) on the impact of nutrition counselling on the consumption pattern of junk food and KAP of adolescent revealed gain in scores and quantum of improvement to be 11.24 and 1.45 times in the experimental group. In a study by Vereecken and Maes (2010) education appeared to have an important effect on both scores of mother's nutritional knowledge and attitude which was in accordance with the present study.

Neela and Srinivas (2014) revealed that there was a significant difference of the mean scores of knowledge gain in rural women before and after exposure to farm video program in castor cultivation. A study done by Singh and Anita (2013) where there was a significant increase in knowledge, attitude and practices after three months of the educational intervention through nutrition counseling, but there was no significant increase in the knowledge, attitude and practices of the subjects in the control group.

Outram *et al.* (2002) too reported a positive change in overall KAP scores in the elderly subjects through nutrition education programme. The significant impact of education intervention on practice score was seen among rural women had been 8.20 before education and 9.36 with education (Aruna *et al.* 2008).

Nutrition knowledge, attitude and behavior or practice have consistently been reported to have significant inter-correlations (Long *et al.* 2002).

According to table 4, nutrition and health attitudes showed a highly significant positive association with nutrition and health practices. But in the post intervention phase, according to table 5. Respondents nutrition and health knowledge showed a negative, but highly significant association with nutrition and health attitudes whereas the association between knowledge and practices was non-significant.

Knowledge and attitude scores were also found to be inversely correlated in a study by Priti *et al.* (2007) on attitude towards Acquired Immune Deficiency Syndrome and its determining factors.

As shown in the tables 6. Nutrition and health knowledge can shape practices directly or indirectly and influence

attitudes. There was no significant association between attitudes and practices at post intervention which demonstrated that attitude had no role of activating the rural women towards behavioral changes or adopting desirable practices. Practices of any knowledge are also a group behavior when the entire group has to adopt a practice.

The association between nutrition and health knowledge with practices demonstrates that women who possessed better knowledge adopted better practices, but in the present context there was no significant association observed between the two variables in pre and post intervention level. Secket *et al.* (2008) assessed KAP of rural women regarding malaria and found a good correlation between knowledge and practices.

As shown in table 7, pre – intervention practice showed a highly significant positive association with post – intervention practice. Similar findings have been observed in a study conducted by Ali *et al.* (2011) where a positive and significant correlation between knowledge and attitude of students towards nutrition was observed and also there was a positive and significant correlation between attitude and proper food habits.

There was also a significant association between attitude and practices which was in agreement with the findings of Zairina *et al.* (2011). The present study conducted also confirmed a significant association between attitude and practice pre intervention, but no significant association was observed post – intervention between attitudes and practices.

Azizet *et al.* (2011) also showed a positive and meaningful correlation between nutritional attitude and knowledge of male students and female students. This research was conducted according to the knowledge – attitude - practice model based on the cognitive – affective - behavior theory in the area social psychology and this model suggests that an increase in knowledge affects attitude and consequently changes the diet (Schwartz, 1976).

Sakhileet *et al.* (2014) investigated nutritional knowledge, attitude and practices among pregnant and lactating women living with HIV in Swaziland and observed significant positive correlation between nutritional knowledge, attitudes and practices.

CONCLUSIONS

With technological advancement, the future offers the promise of high - fidelity, high - speed simulations and personalized instruction using both adaptive and collaborative learning. Centers of excellence in e - learning can provide national support for the design, development, implementation, evaluation, collaboration, and sharing of digital e-learning materials.

Innovative nutritional programs are needed to help increase awareness and knowledge of nutrition, especially in low - income, minority populations who suffer from health disparities. The use of video and other forms of multimedia provide an easy, convenient and cost effective means of delivering nutrition education to populations in community outreach settings.

The triad of knowledge, attitudes and practices in combination governs all aspects of life in human societies, and all three pillars together makes up the dynamic system of life itself. Therefore, they are all linked together in a way so that any increase in knowledge, changes in attitudes towards prevention as well as changes in the kinds of practices. The nutrition knowledge and positive attitude gained should be followed up to ensure that they were transformed into good dietary practices. It is a common observation that knowledge had significant influence on attitude and practices and personal experience influences the individuals' practices and behaviors.

Therefore, it can be concluded that 'EWE', the e – nutrition education material developed for rural women showed a significant impact on the nutritional knowledge, attitudes and practices.

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